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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/764,444	01/27/2004	Yorimichi Dairoku	1035-492	8698
23117 7590 07/13/2007 NIXON & VANDERHYE, PC 901 NORTH GLEBE ROAD, 11TH FLOOR ARLINGTON, VA 22203			EXAMINER GODFREY, KEITH JOSEPH	
			ART UNIT 1732	PAPER NUMBER
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	Application No. 10/764,444	Applicant(s) DAIROKU ET AL.	
	Examiner Keith J. Godfrey	Art Unit 1732	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 24 April 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |                                                                                                            |                                                                                         |
|------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____                                                |

## DETAILED ACTION

This office action is in response to the Amendment filed 04/24/2007.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

**Claims 1, 3-11, 13, 15, and 18** are rejected under 35 U.S.C. 102(b) as being anticipated by Yamamura et al. (US Patent 6,365,644).

**As to claim 1**, Yamamura et al. (US 6365644) teaches the claimed process of making a photo-polymerizable article including, providing a photo-polymerizable composition and curing said composition by photo-irradiation. Further, Yamamura et al. (6365644) teaches that said composition includes an oxetane compound, an epoxy compound, a cationic photo-initiator (Abstract) and, a radically polymerizable organic compound such as urethane(meth)acrylate and epoxy(meth)acrylate (column 1, lines 47-48), (Ethylenically unsaturated oligomers found in aqueous solutions).

**As to claim 3**, Yamamura et al. (6365644) teaches, an oxetane compound (Abstract) that can be polymerized or crosslinked by light radiation in the presence of a cationic photo-initiator (column 3, lines 18-25).

**As to claim 4**, Yamamura et al. (6365644) teaches a resin composition containing a radically polymerizable organic compound and a cationically polymerizable organic compound (column 1, lines 60-64).

**As to claim 5**, Yamamura et al. (6365644) teaches the step of post-curing the product by heat emission or light irradiation (column 18, lines 10-13).

As to claim 6, Yamamura et al. (6365644) teaches a method of photo-fabrication to make a film (column 20, line 15-24).

**As to claim 7**, Yamamura et al. (6365644) teaches the claimed process including, radiating with light the liquid surface of a solution containing a photo-curable resin composition including (meth)acrylate (water-soluble ethylenically unsaturated monomer) and a cationic photo-initiator, shaping said resin composition into a three-dimensional object, stopping radiation of the light, and post curing said three-dimensional object with irradiated light (column 17, line 34-67 and column 18, line1-19).

**As to claim 8**, Yamamura et al. (6365644) teaches that the oxetane compound can be polymerized or crosslinked by radiation from light in the presence of a cationic photo-initiator (column 3, lines 18-25).

**As to claim 9**, Yamamura et al. (6365644) teaches post-curing of the resin (column 18, lines 8-17). Hence, it is submitted that because a post-curing step is required that monomer is present in the composition. As such, said monomer is ultimately polymerized during the second polymerization step (post-curing) in the process of Yamamura et al. (6365644).

**As to claim 10**, Yamamura et al. (6365644) teaches a resin composition containing a radically polymerizable organic compound and a cationically polymerizable organic compound (column 1, lines 60-64).

**As to claim 11**, Yamamura discloses the use of heat to post-cure the resin (column 18, lines 8-17).

**As to claim 13**, Yamamura et al. (6365644) teaches a shaping step performed after the first polymerization step. Further, Yamamura et al. (6365644) teaches that a thin layer is selectively irradiated with light to form a first solid cured resin layer. Additional resin composition is then supplied over the first solid cured resin layer to form a second thin layer which is then selectively irradiated with light to laminate a second solid cured resin layer on the first solid cured layer, thereby creating a shaped three-dimensional shaped object (column 17, lines 54-59).

**As to claim 15**, Yamamura et al. (6365644) teaches the method of photo-fabrication to make a film (column 20, line 15-24).

**As to claim 18**, Yamamura et al (US 6365644) teaches partially curing (thickening) the resin composition (aqueous solution) with irradiating light (col. 17, lines 51-56); forming a second partially cured resin layer on top thereof (shaping into a film) (col. 17, lines 57-64); removing the resin from the irradiating vessel (stopping radiation) (col. 17, lines 65-67); post-curing the resin remaining uncured with light irradiation (col. 18, lines 8-19).

As each and every element of the claimed invention is taught in the prior art as recited above, the claims are anticipated by Yamamura.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claim 12** is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamura et al. (6365644) in view of Phan et al. (US 6022610).

Yamamura et al. (6365644) teaches the basic claimed process as described above.

**As to claim 12**, Yamamura et al. (6365644) does not teach the shaping step performed on a fiber base material.

Phan et al. (US 6022610) teaches a method for adding a water absorbent polymer congruent in shape to a capillary substrate (fiber base material) (abstract and col. 1, lines 33-39; 44-51 and col. 4, lines 10-22). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a capillary substrate (fiber base material), as taught by Phan et al. (US 6022610), in the method of Yamamura et al (US 6365644) because the capillary substrate (fiber base material) will have increased absorbent qualities. Because both of the references are concerned with a similar technical field, namely that of applying polymer resins to substrates, one would have a reasonable expectation of success from the combination.

**Claims 2 and 14** rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamura et al. (6365644) in view of Chmelir et al. (US 4893999).

Yamamura et al. (6365644) teaches the basic claimed process as described above.

**As to claim 2**, Yamamura et al (US 6365644) does not teach a base material onto the aqueous resin is polymerized.

Chmelir et al. (US 4893999) teaches the use of a conveyor belt (base material) in the production of water-soluble polymers (aqueous resin) (col. 3, lines 10-23).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Yamamura et al. (US 6365644) to use the surface of the conveyor belt as the base material onto which the water-soluble polymers are polymerized because of known advantages such as increased productivity that a continuous process provides as compared to a batch process, hence providing for an improved process.

**As to claim 14**, Yamamura et al. (6365644) does not teach that the first polymerization step and the shaping step are performed on a continuous belt.

Chmelir et al. (US 4893999) teaches the use of a conveyor belt in the production and polymerization of water-soluble polymers (col. 3, lines 10-23). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the conveyor belt of Chmelir et al. (US 4893999) with the method of Yamamura et al. (6365644) because of known advantages such as increased

productivity that a continuous process provides as compared to a batch process, hence providing for an improved process. Because both of the references are concerned with a similar technical field, namely that of the manufacturing of polymers, one would have a reasonable expectation of success from the combination.

### ***Response to Arguments***

Applicant's arguments filed 04/24/2007 have been fully considered but they are not persuasive.

Applicant contends that Yamamura et al (US 6365644) does not explicitly disclose information regarding the water absorption properties of the resin. This is not persuasive because Yamamura et al. (US 6365644) teaches all the constituents of the claimed water-absorbing body of the instant invention, specifically, a cationic photo-initiator (photo polymerization initiator) and urethane(meth)acrylate (ethyleneically unsaturated oligomers). Therefore the resin taught in Yamamura et al (US 6365644) inherently has water-absorbing properties as claimed in the composition of the resin of the instant invention.

Applicant contends that Yamamura et al. (US 6365644) is in a different technical field of endeavor however this is not persuasive because Yamamura et al (US 6365644) discloses a method involving curing of resins by photo-polymerization (irradiation of light) much the same as the instant invention.

Applicant contends that the resin composition of the instant invention is different than the resin composition taught in Yamamura et al (US 6365644). This is not



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persuasive because the claims of the instant invention do not cite limitations on the amounts of components in the resin only the basic components within the resin which Yamamura et al (US 6365644) meets.

Applicant contends that Yamamura et al. (US 6365644) does not disclose anything about a solvent or polymerizing of the monomer using a solvent, however, this is not persuasive because the instant invention does not disclose a solvent in any of the claimed subject matter.

Applicant contends that Yamamura et al. (US 6365644) discloses a more complex method of shaping and a different objective of such step compared to the instant invention, however this is not persuasive because the instant invention does not limit the shaping step to only the disclosed steps and the intention of shaping does not have to be the same between both inventions.

Applicant's arguments with respect to claims 2, 6-7, 12, and 14-18 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Keith J. Godfrey whose telephone number is 571-272-6391. The examiner can normally be reached on 8:00-5:00 Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina A. Johnson can be reached on 571-272-1176. The fax phone

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number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

kjg

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